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CANADIAN HOME ECONOMICS JOURNAL



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CANADIAN HOME ECONOMICS ASSOCIATION

- Some Concepts and Generalizations
About Communication
- Nutrition Progress - A Common
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XIIIth

CONGRESS



GETTING THE SHOW ON THE ROAD

This issue we salute two hardworking Convention Committees and their Chairmen: Deanna Burns and Maxine Moore, Co-Chairmen, CHEA 1976 Conference Committee Toronto; and Linda Stepenoff, XIIIth IFHE Congress Chairman, Ottawa.

During the past year, telephones, typewriters and teapots have been in a constant tizzy as both CHEA and IFHE committees and the numerous active groups with whom they have been working have planned and organized activities and programs for two meetings this summer.

The themes, "Life Today — Tomorrow" and "Life — Not Just Survival" will emphasize the necessity for resource-saving lifestyles. More than 100 committee members hope you will take this unique opportunity in July to explore the challenges of the future with your Canadian colleagues and with home economists from around the world.

(Mrs.) E. Margaret Pope
President C.H.E.A.



1976 CHEA CONFERENCE COMMITTEE

Back row, l. to r.: Jane Langdon, Publicity; Noreen Bennett, Exhibits; Sharon Dale, Hospitality; Barbara Floyd, Registration; Joan Stewart, Kathy Benum, Trips and Tours; Margaret McKellar, Registration.

Front row, l. to r.: Linda Moffatt, Hotel Co-ordinator; Maxine Moore, Deanna Burns, Co-chairmen; Mary Adams, Treasurer; Evelyn Shapka, Secretary.

Absent: Carol Taylor, Margaret Howard, Programme; Joan Colnett, Hospitality; Jean Patterson, Exhibits.



International Federation for Home Economics XIIIth Congress Committee. Seated, left to right, Ellen Boynton, Chairman Social Committee; Gertrude Gerlach, Treasurer; Linda Stepenoff, Congress Chairman; Ellie Topp, Congress Secretary.

Standing, left to right, Margaret Pope, CHEA President; Sue Watson, Chairman Tours and Travel; Judy Malcolmson, Publicity Committee; Nola Wade, CHEA Executive Director.

Committee chairmen missing when photo was taken, Meredith Filshie, Chairman, Gifts and Mementos Committee; Janet Lousley, Chairman Foods Committee; Frances McSwiggan, Chairman Congress Facilities; Ruth MacIntosh, Chairman Publicity Committee; Louise Rankin, Chairman Translation Committee.



LIFE TODAY – TOMORROW

1976 C.H.E.A. Conference

Life Today-Tomorrow is the theme for the 1976 Canadian Home Economics Conference to be held July 14-16 at the Four Seasons Sheraton Hotel, Toronto, Ontario. What do the present and the future hold for us and our world? The challenges facing Home Economists in different areas will be explored throughout the three days.

Approximately 600 Home Economists from various fields are expected to attend the Conference in Toronto. Life Today-Tomorrow will be three action-packed days of speakers, discussions, meetings and exhibits. The keynote speaker will be Victor Papanek, noted author and lecturer, presenting his 'Design for the Future'. Another highlight will be a report on the Habitat Conference.

Concurrent sessions will be offered in the fields of Food and Nutrition, Metric Conversion, Housing and Design, Family Studies, Consumerism and Textiles and Design. Lively discussions will focus on such topics as "Nutrition Behavior Today-Tomorrow", Sociological aspects of housing, Violence in the Communications Industry, Alternates to Legislation for Consumers in the future, and "Life Today-Tomorrow" as related to economic, social, and cultural aspects of dress.

The beautiful Four Seasons Sheraton Hotel will be the setting for the 1976 C.H.E.A. Conference. Centrally located downtown, amidst the excitement and bustle of Toronto, the hotel will make a perfect showplace for the many exhibits and events of this vital conference.

Several trips and tours of the Toronto Area and the Niagara Area/Shaw Festival will be offered Saturday, July 17. They will provide a great finishing touch to the 1976 Canadian Home Economic Conference.



CANADIAN HOME ECONOMICS CONFERENCE JULY 14-16, 1976

EXHIBITS COMMITTEE

The Exhibits Committee is pleased to advise the members of the Association that the following companies will be among those exhibiting at the conference to be held at the Four Seasons Hotel in Toronto. For information on remaining available booth space, please direct inquiries to:

Mrs. Noreen Bennett,
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MEMBERSHIP FEES

May we remind our members that the following membership fees are due May 1, 1976.

Active and Associate	\$30.00
1976 Graduates from Canadian universities.....	\$15.00
(for the year of graduation)	
Reserve (1)*	\$15.00
Student (2)*	\$ 5.00

(1) Reserve membership may be granted to those individuals who qualify as active or associate members and who are now (a) retired; (b) not presently employed.

(2) Student membership may be granted to: (a) a person enrolled in an undergraduate program at any Canadian university, faculty, college, school, or department which is eligible to send voting delegates to the A.C.H.E.S. convention; (b) a person who is an active member and pursuing *full time* study; (c) a person who is eligible for active membership and pursuing *full time* study.

You will need your receipt number to obtain the reduced fee for attending the 1976 C.H.E.A. Conference.

Life Today-Tomorrow

C.H.E.A.
1976
CONFERENCE



JULY 14 - 16
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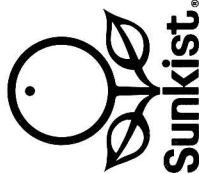
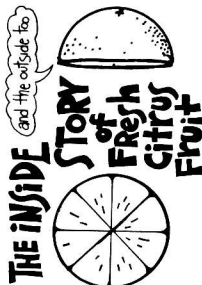
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NUTRITION PROGRESS

A COMMON CAUSE FOR THE HEALTH PROFESSIONS

by Cortez F. Enloe, Jr., M.D.*
Annapolis, Maryland

The Second Annual
Professor Edna Park Lecture
of the
Household Science Alumni Association
University of Toronto

**Executive Vice President-Editor Nutrition Today Society*

I am deeply honored to be invited to present to you the second annual Professor Edna Park Lecture.

I am especially pleased to address this particular audience because the dawning of the nutrition era in health care will have a profound effect on all the men and women involved in Household Science and in all of the other health professions. It is surely not by whim or caprice that your University has changed the definition of Household Science and placed this one aspect of our disciplines in the Faculty of Medicine, which should now be renamed the Faculty of Health. This shift is evidence that the University of Toronto understands that the new knowledge of nutrition is bringing all of the health professions close together. This coming together and the resulting contributions to public health will be one of the most significant events in health care in the last quarter of the 20th century.

In an address given at the Royal Institution in London, on the occasion of the celebration of the centenary of the British Food and Drug Act of 1875, Dr. Alexander Mackay Schmidt, United States Commissioner of Food and Drug, said

"The findings of science move instantly by satellite around the world, creating a community which calls for common understanding and solutions. After 200 years of American independence, we are today more than ever aware of the interdependence in a world of change."

While Dr. Schmidt, one of the most prescient medical statesmen to appear on the Washington scene in a long time, was speaking of international relations, his words reminded me of the effect of nutrition on inter-professional relations. Progress in nutrition science is making each of us in the health professions — physicians, home scientists insofar as they are responsible for the family's medical care, dietitians, dentists, nurses and others — more dependent upon each other. This developing commonality of concern requires us to recognize nutrition progress as a common cause for the health professions.

Nutrition is bringing us together in many ways. Of these, perhaps, none is quite so provocative or dramatic as the way members of various professions are pulling together to meet the problem of malnutrition in hospital patients. This is an instructive example of how the solution to a nutri-

tion problem requires the cooperation of so many experts of such diverse backgrounds.

Hospital malnutrition is the state of malnourishment severe enough to cause clinical symptoms. It occurs in persons during hospitalization, and is not a consequence of their primary illness. It has only recently been recognized. Indications are that it is prevalent, especially in large hospitals. It does not appear to be the result of any one cause but of a combination of deficiencies in our hospitals and their professional staffs. These include physician's ignorance of nutrition, absence of concern by dietitians, poor nursing care, lapses in hospital administration, deficiencies in food service organization and management, or a combination of these and other causes. Hospital malnutrition is unnecessary. It is seriously afflictive. It delays recovery from primary illness. And in several cases with which I am acquainted, it is the direct cause of death.

Broadly speaking, hospital malnutrition seems to result from our growing tendency to look only at the disease before us and not to see that its host is a human being.

This is a serious charge which I have leveled at my colleagues, but the charge is deserved. In *Nutrition Today* magazine, we have reported and documented cases of severe malnutrition. One report showed that when patients in a surgical ward in a large metropolitan hospital were examined for nutritional status, more than 1 out of 4 were at risk of malnutrition. Similar reports have been carried in the *Journal of the American Medical Association*. I think the time has come to take this matter seriously.

Hospital malnutrition manifests itself in a number of ways.

Cases of *Pellagra* have been observed although most people think this condition, due to niacin deficiency, was stamped out years ago.

Wet Beri Beri heart disease, the quick and simple cure for which is simple Vitamin B₁, has not been seen for years, yet it was recently seen by an alert Professor of Medicine when he was called in consultation.

Acute folic acid deficiencies have occurred.

I have seen a case of *Korsakoff's syndrome*, a heart-rending condition wherein there is irreparable brain damage that leaves the victim little better than a vegetable. It was the direct result of a prolonged sub-acute deprivation of Vitamin B₁. This occurred simply because the attending surgeon neglected to order adequate quantities of this essential vitamin during long periods of intravenous feeding.

Most alarming of all are the reports of patients actually *starving to death* in our hospitals. Recently, I made rounds in a large university hospital in the company of a well known nutritionist. There I was shown three patients suffering varying degrees of malnutrition, but in each case it had nothing to do with the illness for which they had been admitted. These cases had been discovered, almost by accident, by an alert dietitian in one case and by nutrition-minded interns in the other two. I recall the plight of one man. He weighed 181 pounds on admission for acute meningitis, from which he had recovered. When I saw him he weighed only 79 pounds. As I looked at him I was reminded of the starving coolies I had to step around as they lay on the sidewalk

along Chowringhee Road in Calcutta during the Bengal famine in 1944. This patient died 3 days later, and the certificate read "acute starvation."

And that in a hospital you and I might well find ourselves in.

The causes of such tragedies are, of course, quite complex. They are too complex to fix the blame on any one aspect of the hospital service. They are too complex to remedy easily. Investigation reveals that cases of malnutrition usually involve physicians who assume that hospital food is nourishing and that his patient is eating what is being put before him. Generally speaking, the physician whose patient is malnourished is usually one who regards the whole subject of nutrition as being much ado about nothing. When it comes to nutrition, I must say that most of my colleagues seem to be living in the age of Mackenzie King. Physicians must bear the primary responsibility for such tragedies.

Dietitians, too, must accept a share of the responsibility for the shortcomings of the nutritional care some patients receive in the average metropolitan hospital. Members of this profession seem to feel that they should not see a patient unless a physician calls upon them to do so. The trouble is that, for too long, dietitians have been dominated by the medical staff. Since they know more about nutrition than anyone else on the staff, the time has come for them to assert themselves where their competence is needed most.

By and large, the problem of hospital malnutrition is a result of two separate but related factors, one of which is concerned with lack of communication between the professions on a subject of common interest.

Hospital governing boards and their administrators and food service systems and its management are not blameless either. During the past decade we have seen the supervision and control of hospital food service gradually drift away from the concern of the medical staff and placed in the hands of food service organizations. These organizations are perfectly adequate. Certainly, their services are economical for a large hospital, and there is nothing wrong with the nutritional quality of the food they serve. However, the use of such systems tends to encourage separation of patient nourishment and patient care that is bound to cause trouble. The mere fact that food service operates as a separate entity and not a part of the hospital itself creates a chasm between them and the professional staff in which the patient frequently suffers. In the hospital, food and medical care belong together, and it is up to the professional staff to see that this reunion is brought about. Nutritional health cannot be separated from the patients' total health.

The second reason for the occurrence of malnutrition in a hospital patient is that a substantial number of patients slip into a state of malnutrition because there is insufficient communication between health professionals. The food service people prepare the meal, put it in front of the patient, and, in time, come and get the tray without noting what has been eaten.

Too often a dietitian doesn't even know if a given patient is in the hospital unless they require special diet. In the case of the patient who suffered

irreparable brain damage because of Vitamin B₁ deficiency in a 600-bed hospital, she was not visited by a dietitian during her four months' confinement.

And the nurse? There is nothing in her training that tells her to share responsibility for a patient's nutritional health, yet she's on the spot, she sees that patient frequently, and certainly she does have a general responsibility. To be sure, in most instances nurses are already over-worked and can't be expected to take the initiative in caring for the nutritional health of their patients. However, by merely being alert, by reading correctly what her eyes tell her, she could contribute much if she were only motivated by physicians and dietitians to take an interest in this aspect of medical care of patients on her service.

Until physicians, and especially surgeons, realize that a well-nourished patient usually recovers in a shorter while, we will not have the interprofessional cooperation that is vitally necessary in this and other aspects of nutritional health. When, because of the interaction of the many factors I have mentioned, a patient becomes malnourished, a physician usually doesn't recognize the condition. Too often they mistake the sallow face, the wan expression, the lack of appetite (if they are aware of it), and the loss of weight (if they have bothered to weigh the patient), as the natural sequelae of being sick.

It is little wonder that our first inclination upon seeing a friend who looks sickly is to inquire "Oh, have you been in the hospital?" The question is strange, when we stop to think of it and consider that the reason for going to the hospital in the first place is to get well. Unfortunately, from a nutrition point of view, all too many people fail to benefit from the experience.

Each of us as a health professional, whether we are a nurse, dietitian, nutritionist, home scientist, physician, dentist, or one of a similar calling, has two obligations. The first requires us to set the highest standards of excellence for ourselves and to make our best effort to live up to them. This is a goal that your beloved Edna Park, whom this lecture honors, set for herself. In the achievement of it she inspired thousands who were fortunate enough to have been taught by her.

The second obligation of a health professional is to measure the closeness of our approach to excellence not just by the degree of excellence we attain in our own professional interest, but by the way we contribute to the welfare of people as human beings. The artisan amongst us may be adept at treating a disease. The outstanding professional is adept at treating people.

Too often each of us becomes so preoccupied with our own field that we forget that we have a common cause that gives us the responsibility for the nutritional health of every person in and out of the hospital. In this respect the home scientist's responsibility is growing, perhaps more than any other. Because, of all the health professionals, the home scientist has the most frequent contact with the homemaker. And it is the homemaker who decides whether the public will be well fed. In short, the nutrition buck stops right with the homemaker. She should be the goal of our major thrust.

Such a statement frequently prompts the observation that the homemaker's role is changing because so many of our meals are being taken out of the home. That is true. Nevertheless, it doesn't reduce her role as the family nutritionist. It only alters the way she learns and applies what she knows about it. Whether she buys a package of processed food in the supermarket or prepares the same dish from raw materials, she is still the person in every household who has the greatest influence on what is eaten. That influence continues later on, whether we eat at home or in a restaurant.

The homemaker is really the family's practitioner of preventive medicine. It is she who sees to it that annual physical check-ups are done, that dental appointments are made and kept, that vaccine and other immune measures are always current, and that her family gets what she considers to be a nourishing diet. The biggest change that has taken place in the role of the homemaker is the result of the fact that so much of the food preparation has been taken out of the kitchen. Today, she makes the selection but hasn't as much to do with the preparation as she once had. To this extent, responsibility for nutrition health has passed to industry.

This is not as great a departure as it appears on the surface, because it is doubtful if most homemakers wish to abdicate their responsibility for the family's nutritional health.

All of us should encourage companies providing prepared foods to show greater concern for the nutrition quality of the products they sell. As matters stand, only a few companies are genuinely concerned with educating health professionals, including home scientists, about the nutrition quality of their products. One reason for this is that marketing people are not convinced that nutrition virtue sells products. Nor do they appear to think that the health professional, to whom the homemaker looks for advice about nutrition, exerts any influence on product choices. They are, of course, wrong, as time will show. However, this reluctance of the food industry to help meet the need of nutrition education is not as much of a threat to the nutritional health of the public as it appears. I believe that health professionals, led by home scientists, will rise to the call of a common cause to keep the homemaker abreast of the developing knowledge of nutrition.

Having been relieved of some of the tasks of food preparation, today's homemaker has to a certain extent been deprived of the application of her instinctive knowledge about food. She now has to take a great deal on faith from the manufacturer. In this quest for knowledge she needs the professional's help as never before in order to make sound nutrition decisions.

Government on both sides of our border are initiating programs in nutrition education to help meet the public need. The United States Food and Drug Administration, for example, is launching a program of nutrition education. They reason, and rightfully so I believe, that if government is going to require industry to describe the nutritional content of products on its labels, then, as a corollary, it is up to government to assist the homemaker in understanding these labels.

But the government can't do this alone. It has to have the help of all of us. If health professionals rise to the occasion, increase their own knowledge of nutrition, we can look forward to the day when professionals will

have a direct effect on improving the product choices the homemaker makes in the supermarket.

There are hopeful signs in the sky.

Physicians are becoming more aware of the importance of nutrition in health care. They are also beginning to appreciate the fact that they have a role to play in giving their patients up-to-date advice about their food choices and eating habits.

Physicians have not been as quick to grasp their new responsibility as many of us might wish. Medical men are, by nature, slow to accept new ideas and responsibilities. They have been ridiculed as backward, especially by biochemists and nutritionists, for not promptly accepting as gospel claims of the benefits of the discoveries of nutrition that have been made in the laboratory. However, before criticizing them we should be grateful that the physician we want treating us is the one who observes Alexander Pope's admonition to

"Be not the first by whom the new are tried,
nor yet the last to lay the old aside."

Now that the new truths of nutrition are weathering the tests of time, physicians are beginning to come 'round. The best example of this is the way they have joined the Nutrition Today Society and the way that nutrition is slowly seeping into medical school curricula.

Dietitians, too, are broadening their horizons and asserting themselves. They, and the home scientist, carry a major responsibility in public nutrition education.

The same can be said for dentists, nutritionists, in fact every one on the health team.

So, I can say to you tonight that the outlook is bright. Having given you this hopeful outlook, let me point out that there is one major, frustrating obstacle in the path of cooperation and greater success in nutrition education. This is inherent in the very broad scope, the very diversity of the subject of nutrition itself.

Nutrition is like the elephant of the Hindu fable that was examined by the "6 blind men of Indostan." To each of them the animal was different. To the first it was "very like a wall." To the second it was "very like a spear." To the third "it was like a snake." The fourth, feeling about the knee, exclaimed, "Tis clear enough the elephant is very like a tree." While to the fifth, feeling the ear, "it was a fan". And the sixth, seizing the swinging tail, concluded the mammoth was very like a rope. Like them, too many people identify nutrition not for the interdisciplinary science it really is. They see it only in the aspect that touches their own interest.

Such diversity of concept will retard nutrition progress until we are willing to open the gates in the fences that confine our various disciplines and let our commonly useful knowledge flow through. Nutrition has no fences. It is like a vast, unconfined spread on the range to which everyone can come and contribute. In order for us to be able to discharge our responsibility to the public and give them the benefits of progress in nutrition, all of us in the health profession must appreciate the necessity of com-

ing together. If we will do this, we will make a virtue of nutrition's diversity. By using the special information that each profession can contribute, we can organize nutrition into a whole that will assure the greatest good for the greatest number.

Thus, ladies and gentlemen, I have just stated to you the principal reason for the creation of the Nutrition Today Society, which we established last year. This is a multi-discipline organization of health professionals and concerned laymen who are dedicated to the increase and dissemination of nutrition knowledge.

The goal of the Society is to do for nutrition what the National Geographic Society has done for geography. Thus, we intend to open the gates separating the health professions and let knowledge flow through to every other professional person and every layman who wants to know more about nutrition.

We have created a network that links us all together. It is a network that reaches out in all directions to enable us to attack the problems of nutrition jointly. This makes it possible to amass the vast knowledge possessed by each profession and bring it together in a common cause for the benefit of everyone. Thus, the diversity of nutrition is being fashioned into a priceless ingredient for progress.

This Society has attracted more than 27,000 men and women in the United States and Canada in its first year of existence. It offers its members the world's most widely read nutrition magazine, which is vital for our professional communication. Every health professional, I hope, will join.

The future of nutrition, its scientific progress, and its benefits to the public, depends upon our willingness to look beyond the boundaries of our individual disciplines. In this we should take a cue from the life of professor Edna Park, who broadened the horizon of her intellect and enlarged the scope of her influence by crossing the boundaries of education to browse in the field of dietetics, and then to move farther and take command in home science for the lasting benefit of thousands.

By recognizing "our interdependence in a world of change", as Dr. Schmidt said, we will be better able to take charge of the changes that influence our lives and guide them for the improved nutritional health of every one in our two great nations.

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Some Concepts and Generalizations About Communication

by Eleanore Lund Vaines, Ph.D.,
Assistant Professor,
Division of Family Sciences,
School of Home Economics,
University of British Columbia,
Vancouver, B.C.

I see communication as a huge umbrella that covers and affects all that goes on between human beings. Once a human being has arrived on earth, *communication is the largest single factor determining what kinds of relationships he makes with others and what happens to him.* How he manages his survival, how he develops intimacy, how productive he is, how he makes sense, how he connects with his own divinity — all are largely dependent on his communication skills (Satir, 1972, p. 30).

Given communication is so crucial to effective relationships over time, home economists in many settings inevitably become involved with understanding and facilitating communication. By communication I mean the complex transfer whereby two or more human organisms attempt to *share the meaning* of a message and thereby affect each other's behavior (Kuhn, 1974). Of course, at present there are a multitude of definitions being used. These need to be recognized and clarified not necessarily to provide a definitive answer but to define what is being sought and why.

The purposes of this paper are to share a particular view of communication and some deductive concepts and generalizations which illustrate this approach. The goal of defining concepts and generalizations is to make knowledge more efficient and not create new knowledge. This can mean that the information is more readily used and the parts of the conceptual system more readily perceived as a whole organization.

Some Underlying Assumptions

The capacity to communicate is concerned with the ability to select and structure input data and thus remember (Weaver, 1972, pp. 708-86). Some of the underlying assumptions about communication are related. We assume that other people structure and select data in the same manner and accordingly relate to others as if this were a truism.

The fact is that the capacities, habits and attitudes of the human organism are highly personalized and subjective. Each person has a unique and selective view of the world of things, ideas, and people. Accepting this as an underlying assumption could greatly facilitate our ability to communicate with others. At least, we could predict some of the outcomes if we did or did not choose to invest the needed human and material resources necessary to gain an understanding of another's viewpoint.

There are a number of other underlying assumptions about communication which present barriers to effective sharing of meanings. In order

for you to gain some insights into some of yours a short pre-test follows. On a separate piece of paper, indicate whether you think the statement is true (T) or false (F). Fold it and file it away until you have read this article. Before reading the summary, return to the pre-test and answer the statements again. In this way, you will be able to give yourself immediate feedback concerning your understanding of some of your underlying assumptions about communication.

1. Communication is good.
2. Because I can speak, read, write, and hear, I can communicate.
3. Communicating is easy.
4. Talking things out is communicating.
5. You can tell it like it is.
6. You can hear what I am saying.

Some Characteristics of Communication

A communication event has both *structure* as well as being a *process*. One way to think of these parts of communication is to imagine them as being similar to the human body. The bones and the muscles give structure and the other systems, like the circulatory system, are processes which sustain the structure. This analogy also illustrates the necessity for understanding the interrelationship of the structure and the process of communication in order to understand the concept as a whole.

Said in another way, the *structure* of communication is like a map set in one frame of a moving picture. When the film is stopped and studied this one image can give some insights. For the purposes of this paper one way of perceiving the structure that Berlo (1960) and Mortensen (1972) propose is a map which shows the source (S) sending a message (M) through a channel (C) to a receiver (R) to affect behavior. The response is in the form of some positive or negative, verbal and nonverbal feedback (F).

Such an illustration is not meant to hide the immense complexities of communication structure but to be used as a means of sharing more about what is happening in a communication event. And it gives some of the component parts label with which to discuss them.

The communication *process* is the moving picture. It is as if you put the frames of the structure into a camera and turned on the projector. Because of the dynamics of the communication process, it has neither a beginning nor an end and flows like a stream through time. Although communication is spoken of as if it can be stopped or that it can break down, in reality this can only be done artificially. For example, a video tape can record a communication event and tends to be one of the most accurate ways in which a number of observers can analyze a situation. Photography is still two dimensional, however, and zooming in and zooming out on images with this technique distorts information in somewhat the same way as one person telling another about an event which they have observed by themselves. Contrary to the popular notion, it is never possible to tell it like it is or was but only to report slices of perceptions of what happened.

Having an image of the structure and process of communication which can be shared as an explicit representation is one means of refining what is known about communication events and facilitate the formulation of important questions about what needs to be discovered. Using such comprehensions as an end, however, can lead to over-simplification as well as symbol-behavior confusion (Watzlawick, *et al.*, 1974). The price of using explicit maps is eternal vigilance.

Some of the characteristics of the communication process and structure are summarized as follows:

Concept: Some Characteristics of Communication

Generalizations:

- 1.00 Communication is defined as a complex dynamic system with *structure* and *process*.
- 2.00 The component parts of the *structure* of a communication system can be mapped and are always in process.
 - 2.1 The structure of the system can be defined through the organization of the component parts: The source, message, channel, receiver, and feedback.
 - 2.1.1 The *source* is the originator or initiator of encoded message.
 - 2.1.2 The *message* is an interrelated system which consists of the verbal, non-verbal, and meta-communication bands which form an organic whole.
 - 2.1.3 The *channel* is a public or private means whereby a message is transmitted from the source to a receiver (Schramm, 1973).
 - 2.1.4 The *receiver* decodes or translates the stimuli of the message and interprets the meaning(s) in relation to their personalized orienting and selective functions (Rausch, 1974).
 - 2.1.5 *Feedback* is the message decoded by the receiver and the affect the sources's message has on the receiver is manifest in the receiver's feedback. In turn, the effect on the source determines in what way the ongoing process will continue.
- 3.00 The communication *process* is the dynamics of the system in context and over time and includes the ongoing functions of the system.
 - 3.1 The communication process over time includes: (a) the spontaneous elements of innovation and change and (b) the patterns which are predictable and reoccur with varying probability in different contexts.
 - 3.2 The communication process has neither a beginning nor an end.
- 4.00 The image of the structure and process in communication "... conceives of 'persons interacting with others' as the irreducible unit of observation." (Mortensen, 1972, pp. 376-377)

- 4.1 "... communication is now understood to result from the dynamic interplay of a multiplicity of interacting forces and functions — physical, psychological, social, and cultural — all so inexorably linked that the gestalt impact of communication events can only be described as having the attributes of an open system... (and the) openness of the system mean that our experience of communication is also open to change and redefinition." (Mortensen, 1972, p. 377)

The Goal of Human Communication

Berlo states that the ultimate goal of human communication is interaction. This is a state of interdependence where there is neither a distinct source nor receiver (Berlo, 1960, pp. 129-131). But there are different levels of interdependence which preclude this potential. Simplistically these relationships can be characterized by a source who brings about some kind of intended or unintended change in the receiver. The contemporary view of communication stresses that this is not an individual unit or units of behavior but persons interacting with others and therefore includes all the complexities and variables which this view entails. (For example see: Mortensen, 1972; Ruben, 1972; Rausch, *et al.*, 1974).

The state of interdependence and the effectiveness of the communication are intimately related. When the level of interdependence is shared by the source and the receiver, communication tends to be more effective. That is to say that there is a greater degree of shared meaning about the message.

Receiver oriented messages are in general considered to be the most effective because the meaning of the message is stressed in receiver terms. Then a communication system is said to exist and differs from an information system which stresses message *per se* (Ruben, 1972, pp. 134-135). To facilitate the desired level of interdependence and therefore effective communication, obtaining all manner of feedback is crucial for both the source and the receiver.

The goal of human communication is summarized briefly as follows.

Concept: The Goal of Human Communication

Generalizations:

- 1.00 Communication is neither good nor bad but is either effective or ineffective of a unique receiver in a particular context for a specific time.
- 2.00 The *meaning* of the message which the source sends is not *in* the message but in the meaning which the receiver gives the message.
- 3.00 The goal of human communication is that the source and the receiver share the meanings of the message to a degree where change is affected.
 - 3.1 The change which is affected may be intended or unintended.
 - 3.2 The change which transpires is the result of the sum of a dynamics which is the interplay of a multiplicity of interacting forces and functions all of which are intimately linked.

- 4.00 There are different levels of interdependence of the source and receiver in a communication event. To achieve effective communication, the level of interaction needs to be implicitly or explicitly agreed upon by the source and receiver.
 - 4.1 Martin Buber (1958) has identified two levels.
 - 4.1.1 I — It level is between a subject and an object.
 - 4.1.2 I — Thou level is referred to as dialogue.
 - 4.2 David Berlo (1960) has identified four levels of interdependence.
 - 4.2.1 The source and receiver are dyadic concepts.
 - 4.2.2 Action-Reaction Sequence: The initial message affects the response that is made to it, the response affects the subsequent response and so forth.
 - 4.2.3 Empathetic skills: The interdependence produced by expectations about how others will respond to a message.
 - 4.2.4 Interaction: The process of reciprocal role-taking and there is no distinct source and receiver (Berlo, 1960, pp. 129-131).
 - 4.3 John Powell (1969) has identified five levels which represent degrees of man's willingness to go outside of himself to communicate to another.
 - 4.3.1 Cliches. The least willing to communicate.
 - 4.3.2 Reporting facts.
 - 4.3.3 Some reporting of self and ideas with little risk.
 - 4.3.4 Sharing of feelings and emotions which are more clearly about the self and involve emotional honesty.
 - 4.3.5 "Peak Communication." That which happens occasionally when mutual empathy is attained. (Powell, 1969, pp. 50-62)

Some Suggestions for Translating the Concepts and Generalizations

Translating these concepts and generalizations about communication can be facilitated in a number of different ways. The goal is to simulate real life situations. (For example, Pfeiffer, *et al.*, 1972-74) It is assumed that the learner can then transfer the concepts and generalizations when confronted with a personal or professional problem solving situation.

Two approaches which I use most are case studies and role playing. In both of these kinds of activities the learner is forced to become involved. (See, Klemmer, 1970 and 1975)

I have found it best to start with less threatening situations such as the "Alligator Story" (Simon, Howe, and Kirschenbaum, 1972, pp. 290-294). A group of five students work together to gain a consensus about the most to the least acceptable of the five characters in the story. The results of all the groups decisions are recorded on a large grid on the blackboard. Through both the small group and class discussion, the learner becomes

aware of their classmates' subjective and selective views of the world. To arrive at some shared meanings means that the group has to apply the communication concepts and generalizations.

Then I move on to situations in which the learner is asked to apply the problem solving model. One example is a case study of Gladys and Harold who are having some communication problems. (Klemer, 1970, p. 208) The objectives of the task are to identify the communication problems implied in the brief dialogue and to suggest practical ways of optimizing communication for this couple.

As a result of using this approach, the learner needs to (1) review the concepts and generalizations and their meaning, (2) stick to the focus of the task and suspend judgments about the people involved, (3) and find ways of practically helping people help themselves. An implied outcome is that the learner tends to listen to all the meanings of the messages and, therefore, to analyze the problem with more openness and compassion.

Approaching communication through synthesizing some concepts and generalizations is one way of making this dynamic area of study more efficient and useable. It can also be a means of generating discussion and discovery concerning communication.

Some of the problems of exploring communication are the many different meanings of the term and the plethora and quality of literature which is available. For example, it is clear the sharing meanings can add enrichment to a person's life. But it does not necessarily follow that if a person communicates, everything will be fine as a result.

It is toward a more informed approach to this important area of concern for home economists in many settings that these concepts and generalizations are being shared. As one of the products of some ongoing research, the reader's comments and suggestions are solicited to facilitate the development and refinement of this approach.

The Pre-Test: All the answers are false.

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METRIC UPDATE

by Wendy Sanford
Corning Glass Works of Canada Ltd.
C.H.E.A. Metric Committee

Metric Update

Metric conversion moves on gradually gaining momentum. More consumer goods are appearing in metric sizes. The recent signing in the U.S.A. of their Metric Conversion Act will result in increased activity south of the border.

A great deal of time and effort is going into making decisions about how best to convert either a product or programme. Seldom is it just a case of straight metric equivalents. This has become an excellent opportunity to evaluate and then incorporate changes which can improve a product and/or programme. Working groups or committees have been established composed of members representing different views on the same subject. Sharing information and understanding the needs of others is a very worthwhile "spin off" of the metric metamorphosis. There is plenty of opportunity for home economists to illustrate their professional expertise.

One of the more active committees has been the Cookware and Housewares Group. This group consists of representatives from manufacturers, retailers, C.H.E.A. bake-mix producers, Consumer and Corporate Affairs, CAC and the US Metal Cookware Manufacturers Association.

A Metric Guide for Cookware and Bakeware is being prepared for publication. These guidelines are for the use of manufacturers, retailers, recipe writers, educators and any other users of consumer cookware or bakeware products to better serve the needs of the consumer. Products are defined as to terminology and size. The major change is that most bakeware items that previously were described in dimensions will now be given in volume. This is intended to provide rationale bakeware items. Presently there is too great a variation in similar items and no standard way to measure dimensions or slope of sides. As an example, a cake pan would be listed with the following definition, "a cake pan is a flat bottomed pan with straight or slightly flared sides suitable for baking cakes with a depth of no less than 3.5 cm and generally no more than 5.5 cm. The size is expressed as its level full capacity. The recommended sizes for cake pans are 1.2ℓ, 1.5ℓ, 2ℓ, 3ℓ, 3.5ℓ, and 4ℓ." The recipe instruction would simply give the volume and generic name of the bakeware required such as "bake in a 2ℓ cake pan".

With this system the cake pan can be any shape yet properly designed for good results. For specialty cakes there are appropriate pans such as a fruit cake pan which would have a depth of 7-9 cm. Another example would be a "1.5ℓ loaf pan" with a depth of 6-8 cm and length to width approximately 2ℓ. In each case the critical dimension(s) becomes an integral part of the generic name.

Home economists whether teaching, a HEIB or a consumer will find this a useful reference. Details on how to obtain a copy will soon be available.

Major Appliances are being discussed by a similar group. To date the main decision has been that temperatures on control dials will be shown in 10°C graduations from 60-290°C. Replacement temperatures, not conversions are to be used for charts or stickers as follows:

60°C – 140°F	*190°C – 375°F
70°C – 150°F	*200°C – 400°F
80°C – 170°F	*220°C – 425°F
100°C – 200°F	*230°C – 450°F
120°C – 250°F	240°C – 475°F
140°C – 275°F	260°C – 500°F
*150°C – 300°F	270°C – 525°F
*160°C – 325°F	290°C – 550°F
*180°C – 350°F	GRILL(E) replaces broil

The most commonly used temperatures have been starred*. Stickers or charts must be easy to understand. C.H.E.A. has prepared a format for the appliance committee.

No reference should be made to terms such as warm, moderate or hot ovens. The carry over from pre-temperature controlled ovens should be phased out by now.

From major appliances to kitchen planning. Another group is being formed to consider metric changeover related to kitchen cupboards and appliances with input from C.H.E.A. as to kitchen planning guidelines. Measurements are generally based on multiples of 10 cm in keeping with the building unit of 100 mm.

Metric conversion of packages for consumer products, their proposed sizes and target dates are gradually being established. The new Consumer Packaging and Labelling Regulations have encouraged some industries to adjust to metric sizes when making other required changes. For non-food products the deadline was extended to January 1976 and food products are scheduled for March 1, 1976.

The first major food commodity to appear in metric sizes was sugar. Beginning in Western Canada in September 1975 and early in 1976 in the East this changeover should be completed during the year to sizes of 500 g, 1, 2, 4, 10, 20 and 40 kg.

During 1976 cocoa and chocolate beverage packages of 250 and 500 g are expected. Pasta, hot cereals, spices, pet foods are also to be metric only. Butter has not yet been finalized, however the latest information indicates that 500 g, 250 g and 125 g will be approved. This decision also affects edible oil products.

In determining target dates for a metric product there is intersectoral discussion in an attempt to co-ordinate the market introduction with Consumers being ready and having access to the necessary equipment.

It is not too early for metric recipes. Since food package or can sizes have not been finalized in many categories, it is recommended that ingredients be given in volume rather than as package or can size. Approved

metric cooking measures are available in many major retail outlets across the country. Beware of incorrect sets which do not have capacities of 1, 2, 5, 15 and 25 ml in the small set and 50, 125, 250 ml in the dry set. In keeping with the overall target dates most recipes should be metric by 1977-78 and all by 1980. Recipes are written in metric units only. Any consideration to have dual lists of ingredients is definitely discouraged, as it is confusing and unacceptable.

The B.C. Home Economic Association have prepared an excellent metric recipe book "Cooking the Metric way, an easy guide to good nutrition" which is available for \$2.25 and can be ordered from Mrs. Marjorie Taylor, 2268 Kensington Ave., Burnaby, B.C. V5B 4E2. Money must accompany all orders.

The March-April issue of Canadian Consumer the Journal of Consumers' Association of Canada has a special 24 page insert on metric conversion. This reference will be helpful to us all.

Many areas other than the few mentioned are being considered. Any comments or metric input by our members to the C.H.E.A. metric committee is welcomed and encouraged.

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PHYSIOLOGICAL AND BIOCHEMICAL RESPONSES TO SHORT TERM CALORIC DEFICIT IN HIGHLY ACTIVE YOUNG MEN^{1,2}

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2. *Supported in part by Defence Research Board Grant 8865-10 and in part by a grant from the Research Committee of the University of British Columbia.*
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RESUME

REACTIONS PHYSIOLOGIQUES ET BIOCHIMIQUES PROVOQUEES PAR UN REGIME HYPOCALORIQUE A COURT TERME, CHEZ DES SUJETS JEUNES ET TRES ACTIFS,

Noble, R. J., Brown, S. et Lee, M.

Le but de cette étude était d'évaluer le rendement au travail, en réponse à un régime hypo-calorique administré à des sujets soumis à des périodes quotidiennes d'activité normale ou d'activité modérément intense. Quatre sujets de sexe masculin, en bonne santé (de 23 à 27 ans) ont été soumis à l'un des régimes suivants: (1) un régime ordinaire de 3600 calories/jour, durant 14 jours; (2) un régime partiellement contrôlé de 1800 calories/jour durant 10 jours; (3) un régime normal de 4000 calories/jour durant 14 jours; (4) un régime partiellement contrôlé de 1800 calories/jour en même temps que les sujets étaient contraints à une dépense additionnelle d'énergie de 500 calories/jour durant 10 jours; (5) un régime ordinaire de 4000 calories/jour durant 14 jours. Le poids corporel moyen a diminué durant les périodes 2 et 4 et sa diminution fut accompagnée de légers changements dans la densité et la composition du corps. Il n'y a pas eu d'augmentation significative de poids durant les périodes de récupération 3 et 5. Les mesures de force et de capacité respiratoire maximale sont demeurées inchangées, quoique la capacité de travail physique ait diminué continuellement après la Période 2. Les paramètres biochimiques mesurés ont enregistré des fluctuations mineures mais sont demeurés en-deça des limites établies durant l'étude. Le régime, tel qu'appliqué, en général fut bien toléré. On recommande de poursuivre les recherches sur le processus de récupération.

ABSTRACT

PHYSIOLOGICAL AND BIOCHEMICAL RESPONSES TO SHORT TERM CALORIC DEFICIT IN HIGHLY ACTIVE YOUNG MEN

Noble, R. J., Brown, S. and Lee, M.

The purpose of this study was to investigate work performance on a semi-defined, low calorie diet with daily periods of normal or moderately heavy activity. Four healthy male volunteers (23 to 27 years) were maintained on diets of (1) 3600 calories/day regular diet, 14 days, (2) 1800 calories/day semi-defined diet, 10 days, (3) 4000 calories/day regular diet, 14 days, (4) 1800 calories/day semi-defined diet plus 500 calories/day additional energy expenditure, 10 days, (5) 4000 calories/day regular diet, 14 days. Mean body weight decreased during Periods 2 and 4, and was accompanied by slight changes in body density and body composition. There was no significant increase in weight during the recovery periods (3 and 5). Strength measurements and maximal oxygen uptake remained unchanged, while physical work capacity decreased continually following Period 2. The biochemical parameters measured presented minor fluctuations but remained within accepted limits throughout the study. The diet applied was generally well tolerated. Further research into the recovery process is indicated.

INTRODUCTION

In a variety of military and civilian situations, including emergency conditions, low or inadequate intakes of food energy may be necessary and/or unavoidable for short periods of time. Depending upon such factors as their previous nutritional state, the quality of the temporary diet, and the duration of the dietary restriction, exposed individuals may experience a depletion of their nutrient stores and a decline in physical performance (2, 4, 8). In situations such as rescue missions a decline in physical performance may be a critical factor in the survival of persons at risk. Further investigation is required to determine the ability of humans to maintain acceptable levels of work performance while receiving insufficient food energy for a relatively short duration.

The purpose of this study was to investigate the ability of a low calorie diet (balanced with respect to other known nutrients) to support short-term work performance in four male subjects at two levels of energy expenditure. The assessment of the nutritional adequacy of the diet and the evaluation of work performance were based on anthropometric, biochemical, physiologic and strength measurements carried out on the subjects during the course of the study.

METHODS

Subjects

Volunteers for the ten-week study were four male graduate students, 23-27 years of age. Prior to starting the study the subjects were given a physical examination by a physician who evaluated each subject as healthy and

physically fit. None was considered to be underweight or overweight which, for the purpose of this study, was defined as greater than ten per cent deviation from the normal weight for height as established by the Metropolitan Life Insurance Company of New York (10). The subjects lived in the Home Management House on the campus of the University of British Columbia throughout the study and consumed only the food prepared by the resident dietitian (R. J. N.).

During the day the subjects were free to engage in normal activity on the campus, with slight variations as required by the study. During diet period 4 (see below) an additional daily energy expenditure of approximately 500 calories was superimposed on the usual activity level, either by swimming 40 minutes per day or jogging six miles in 50 minutes (1). It should be emphasized that the participants in this study were in excellent physical condition and maintained a high level of physical activity comparable to military recruits who might be subjected to stress conditions.

Diets

The five experimental periods are presented in Table I. The "control" diet

TABLE I
Schedule of Experimental Periods

<i>Period</i>	<i>Diet*</i>	<i>Duration</i>	<i>Exercise</i>
1	control (3600 calories)	14 days	usual
2	experimental (1800 calories)	10 days	usual
3	control (4000 calories)	14 days	usual
4	experimental (1800 calories)	10 days	increased by 500 calories/day
5	control (4000 calories)	14 days	usual

* Each diet supplied the eight nutrients with recommended intakes in amounts equal to or in excess of the Canadian Dietary Standard for men at activity level B-C (6).

consisted of usual foods providing eight nutrients (protein, calcium, iron, Vitamin A, thiamine, riboflavin, niacin and ascorbic acid) in amounts equal to or exceeding the Canadian Dietary Standard's recommended intakes for adult males at activity level B-C (6). (The study was performed prior to publication of the 1974 revision of the Canadian Dietary Standard (1974). As a result, the nutrient values are those listed in the 1964 Canadian Dietary Standard, with the 1968 revision of protein recommendations). The foods consumed during the "control" periods varied from day to day. Therefore, the intake of nutrients varied, although total food energy consumption was maintained at a constant level according to the design of the experiment. The total daily food energy intake of 3600 calories during the first period was associated with gradual weight loss. To prevent this occurring during subsequent control periods (3 and 5) the intake was increased to 4000 calories per day.

The "experimental" diet was semi-defined and consisted of enriched white flour (260 gm), margarine (56 gm), skim milk powder (63 gm), refined sugar (24 gm), salt (10 gm), and baking powder (40 gm). The ingredients were combined and baked in the form of a loaf. One loaf was prepared for each subject each day. The loaf, together with an additional 21 gm margarine as a spread and one vitamin supplement capsule, provided

1800 calories and met or exceeded the levels recommended in the Canadian Dietary Standard (6) for the eight nutrients in the Standard but not for calories. The daily nutrient intake remained at a constant level when the subjects were consuming the "experimental" diet since the loaf recipe did not change at any time.

Originally, the five experimental periods were to be of equal length, i.e. 14 days. However, as symptoms of dizziness and fatigue became relatively marked on the eighth and ninth days of Period 2, the duration of Periods 2 and 4 were reduced to ten days each. The intake of eight nutrients and food energy during each of the five experimental periods, as well as the appropriate recommended intakes for comparison are presented in Table II.

TABLE II

Mean intakes of food energy and of eight nutrients of subjects for five experimental periods. The Canadian Dietary Standard is also presented for comparison.

<i>Test Period</i>	<i>Calories</i>	<i>Protein (g)</i>	<i>Calcium (mg)</i>	<i>Iron (mg)</i>	<i>Vitamin A (I.U.)</i>	<i>Thiamine (mg)</i>	<i>Ribo-flavin (mg)</i>	<i>Niacin (mg)</i>	<i>Ascorbic Acid (mg)</i>
1 Mean ± sd*	3600	145 ± 28	1524 ±1077	19.2 ± 3.3	9627 ±5806	5.60 ±3.18	5.04 ±1.76	30.1 ±16.6	278 ± 57
2**	1800	50	903	21	7578	4.20	4.20	27.3	50
3 Mean ± sd	4000	150 ± 32	1521 ±1046	18.8 ± 2.7	8666 ±4946	7.54 ±3.40	6.55 ±1.79	32.5 ±14.8	243 ± 45
4	1800	50	903	21	7578	4.20	4.20	27.3	50
5 Mean ± sd	4000	172 ± 27	1180 ± 220	21.0 ± 2.2	6896 ± 696	7.16 ±3.10	6.65 ±0.91	41.2 ±17.2	257 ± 45
Canadian Dietary Standard men weighing 158 pounds (6).									
Activity Level									
B	3650	48	500	6.0	3700	1.1	1.8	11.0	30
C	4250	48	500	6.0	3700	1.3	2.1	13.0	30

*Standard deviation indicates variability from day to day, not variability between subjects.

**Periods 2 and 4 show no standard deviations for calorie intakes since the low calorie diet remained constant.

All food was weighed to ensure the four subjects received identical amounts of all nutrients and calories during each of the control and experimental periods. Water and clear coffee or tea were permitted ad-libitum.

Measurements

Submaximal work capacity, or physical work capacity at a heart rate of 170 beats per minute (PWC 170), and maximal oxygen uptake were determined as described by Weiner and Lourie (13), using a bicycle ergometer. Strength measurements consisting of left and right hand grips, backward extension of the trunk, and leg extension were performed also as described by Weiner and Lourie (13). These measurements were taken at the end of each period.

Changes in body composition were assessed with the aid of 25 anthropometric measurements including six skinfold thicknesses, eight body diameters, and eleven circumferences. Measurement procedures followed those described by Wilmore and Behnke (14). All measurements were taken at the end of each period. Each subject was weighed daily at the same hour (8 A.M.) in appropriate clothing, using a beam balance. Body fat was com-

puted from body density determined at the end of each period by underwater weighing, according to the equation:

$$\% \text{ Body Fat} = \left[\frac{4.201}{\text{density}} - 3.812 \right] \times 100$$

The procedures and computations are those described by Consolazio et al. (3).

Two fasting blood samples were collected during each control and experimental period, one midway through the period and the other on the last day of the period. Twenty-four hour urine samples were collected on the last day of each period. Hemoglobin and hematocrit were determined on whole blood and the following parameters were measured in plasma; fasting blood glucose, cholesterol, free fatty acids, total serum protein, serum albumin, blood urea nitrogen, and Vitamins A, E, and C. Urine was analyzed for thiamine levels. Analyses were carried out using standard clinical laboratory procedures as described by Desai and Lee (5) except for free fatty acids, which were measured by the colorimetric micro-method of Laurell and Tibbling (9).

Statistical Analysis

A two-way analysis of variance was used to test for statistical significance among the period means of the treatment conditions. This type of analysis was necessary to remove the effects of the individual differences between the subjects and, therefore, produce a more valid picture of the effects of the five experimental periods. If a significant difference was found ($P \leq 0.05$), Newman Keuls post hoc analysis (12) was performed to determine which treatment means were statistically different.

RESULTS

The subjects' mean total body weight decreased during both low calorie periods (Periods 2 and 4). This is shown in Table III and in Figure 1. The

TABLE III

Mean total body weight, lean body weight, and fat body weight of subjects on the last day of each test period. Composition of the weight loss occurring during the two low calorie periods (Periods 2 and 4) are included.

Period	Total Body Weight (kg)	Lean Body Weight (kg)	Fat Body Weight (kg)	Composition of Weight Loss		
				Mean Total Body Weight Loss	% Lean	% Fat
1	73.3 ± 6.3*	65.4 ± 3.8	8.6 ± 3.1			
2	71.2 ± 6.3	63.4 ± 4.8	7.8 ± 2.9	2.1 kg (2.9%)	71%	29%
3	72.2 ± 5.6	62.4 ± 4.1	9.3 ± 3.1			
4	69.8 ± 5.6	62.6 ± 3.9	7.4 ± 2.8	2.4 kg (3.3%)	10%	90%
5	71.4 ± 5.2	63.7 ± 3.9	7.4 ± 1.7			

*Mean ± standard deviation.

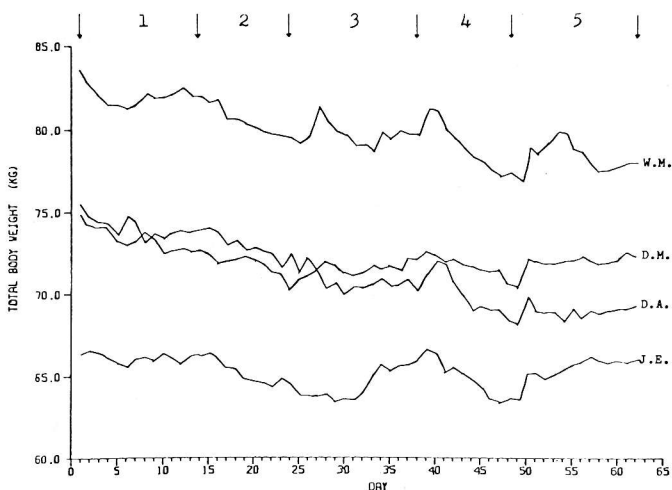


Figure 1. Daily total body weight of individual subjects. The arrows indicate the duration of each period.

weight loss was greater during Period 4 (2.4 kg or 3.3 per cent) than during Period 2 (2.1 kg or 2.9 per cent). This difference was attributed to increasing the level of energy expenditure in the absence of a corresponding increase in food energy intake during Period 4. The slight increase in mean body weight during both recovery periods (3 and 5) was not statistically significant. Mean body weight did not return to the original level during the recovery periods since the level of energy intake was intended to maintain body weight rather than to increase it.

Composition of the weight loss was determined by body density calculations. The results are shown in Table III. There were no statistically significant changes in either fat or lean tissue throughout the study. However, a trend (not statistically significant at a 5% level of confidence) toward a decrease in both fat and lean tissue was evident during the two low calorie periods. Twenty nine per cent of the mean weight lost in Period 2 and 90 per cent of that lost in Period 4 was calculated to be fat. Earlier investigators (2, 8) have stated that approximately 40 per cent of total body weight loss under conditions of semistarvation consists of adipose tissue. The striking increase in the weight lost as fat during Period 4, compared to Period 2, may be accounted for by changes in fluid loss and/or adaptation by the subjects to the restriction in food energy consumed.

Maximal oxygen uptake and measures of strength remained unchanged throughout the study. Aerobic power, as assessed from maximal oxygen uptake capacity, is a convenient index of cardiorespiratory fitness. Strength testing is a nonspecific indicator of physical fitness.

The measurement of PWC 170 assumes a linear increase in heart rate with the work load or oxygen consumption. However, the accuracy of estimates made of aerobic power from heart rates during work will depend on the physical condition of the subjects being tested. As mentioned previously, the subjects participating in the current study were evaluated as

being in excellent physical condition. Mean PWC 170 values decreased significantly (at a 5% level of confidence) after Period 2 and continued to drop for the duration of the study (Figure 2). Changes in energy intake and

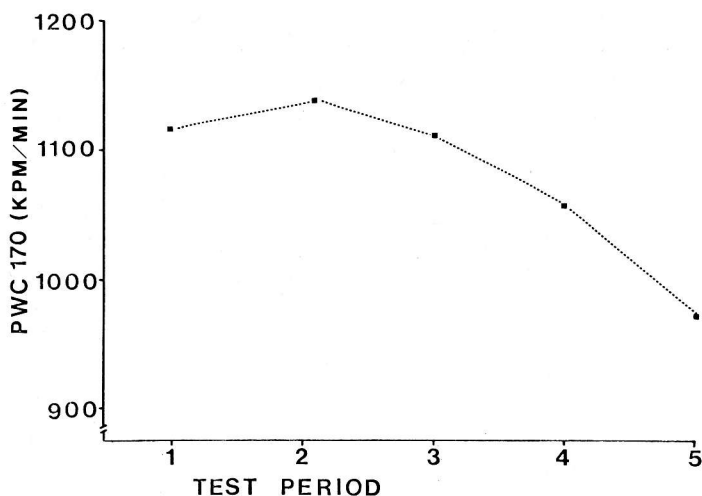


Figure 2. PWC 170 determinations on subjects at the end of each test period. Mean value for four subjects. PWC 170 is expressed in kilopond meters per minute.

activity had no apparent effect on the direction of the curve, indicating a possible carryover effect from one period to the next. The results suggest that a recovery period longer than 14 days may be required after a ten-day restriction in food energy intake. Similarly, a much more severe restriction or a longer duration is required before significant changes occur in strength measurements.

Anthropometric measures presented very little variation during the entire study. This result is in accordance with the small magnitude of weight loss (2.9 to 3.3 per cent) occurring over the relatively short stress periods. It also indicates that loss of weight is not confined to one area of the body.

Maintenance of biochemical homeostasis under conditions of stress is a sign of the body's ability to adapt to various situations. Most of the biochemical parameters measured remained within clinically accepted normal ranges, although some statistically significant changes did occur. A summary of the biochemical results is included in Table IV. Circulating energy

TABLE IV

Results of biochemical measurements performed at the end of each experimental period. Means and standard deviations are presented.

Period	1	2	3	4	5
Whole Blood					
** Hemoglobin (mg%)	16.6 ± 0.4	15.7 ± 0.4	15.9 ± 0.4	15.8 ± 0.2	17.2 ± 0.5
** Hematocrit	47 ± 1	45 ± 2	46 ± 1	43 ± 1	45 ± 1
Plasma					
* Fasting blood glucose (mg%)	71 ± 5	63 ± 5	75 ± 2	69 ± 5	73 ± 12
** Cholesterol (mg%)	183 ± 21	150 ± 14	178 ± 2	158 ± 7	178 ± 16
** Free fatty acids (mmoles/l)	0.307 ± 0.12	0.540 ± 0.17	0.297 ± 0.12	0.500 ± 0.19	0.228 ± 0.12
** Total serum protein (g%)	7.4 ± 0.4	7.2 ± 0.5	6.2 ± 0.8	6.6 ± 0.5	7.4 ± 0.4
* Serum albumin (g%)	3.8 ± 0.2	3.7 ± 0.1	3.3 ± 0.3	3.4 ± 0.3	3.6 ± 0.1
** Blood Urea Nitrogen (mg%)	11.8 ± 1.0	10.8 ± 2.5	13.5 ± 1.7	11.6 ± 2.9	15.8 ± 3.1
N.S. Vitamin A (mg%)	0.078 ± 0.008	0.076 ± 0.006	0.087 ± 0.012	0.078 ± 0.006	0.086 ± 0.001
* Vitamin E (mg%)	1.07 ± 0.1	1.00 ± 1.1	1.28 ± 0.3	1.08 ± 0.2	1.35 ± 0.3
** Vitamin C (mg%)	0.94 ± 0.11	1.03 ± 1.30	1.05 ± 0.12	0.93 ± 0.05	0.36 ± 0.30
Urine					
* Thiamine (ug/ml)	0.38 ± 0.24	0.52 ± 0.09	0.28 ± 0.08	0.65 ± 0.20	0.36 ± 0.30

* Statistically significant difference at 5% level of confidence.

** Statistically significant difference at 1% level of confidence.

N.S. No statistically significant difference.

sources responded in a predictable manner. (In order to maintain normal blood glucose levels while on a diet low in carbohydrate, endogenous energy stores must be mobilized). Since energy is most commonly stored as adipose tissue, a decrease in blood glucose results in an increase in plasma free fatty acids. During the two periods of restricted intake (Periods 2 and 4) fasting blood glucose decreased while free fatty acids increased. These changes were statistically significant (at a 5% level of confidence). Variations in the remaining biochemical parameters measured can be attributed to changes in the level of intake of nutrients in the two diets. All of the changes were slight and remained within established normal limits.

DISCUSSION

This study was designed to investigate the ability of diets low in food energy but adequate in eight nutrients to support short-term work performance at two levels of energy expenditure. The design assumes independence among the treatment periods. However, the treatment situations proved not to be independent of one another, and the subjects presented a progressive stress effect (as judged from expressed symptoms) over the duration of the experiment. The carryover effect was particularly pronounced for one measurement (PWC 170), although some of the other parameters also exhibited it but less obviously. Thus, the indications of stress undergone by the subjects were a progressive deterioration in heart rate response to exercise over the time course of the experiment and in well-being over each of the restriction periods, as indicated by symptoms of dizziness and fatigue. These latter symptoms were relieved on reinstatement of the normal diet, but the changes in PWC 170 indicate that the length of time required to complete recovery after a period of restricted energy intake is much greater than was anticipated.

Nevertheless, over the duration of the study biochemical parameters remained within clinically acceptable limits, and changes in anthropometric measurements were not apparent except for body weight, which changed concomitantly with caloric intake and energy expenditure. Maximal oxygen uptake and strength remained constant, within measurement limits, over the course of the study. The body appears able to adapt to variations in amount of food energy consumed for short periods of time, but recovery appears to be influenced by the preceding experimental conditions. Similar observations of adaptation and delayed recovery have been reported by others (4, 7) but a detailed account of the recovery process has not yet appeared.

The participants in this study were in peak physical state and maintained a high level of physical activity, comparable to military recruits who might be subjected to stress situations. They were not a random sample characteristic of the normal Canadian male. As a result, extrapolation of the observations to other segments of the population cannot be made. Comparison with similar studies is difficult as different conditions of diet and stress were employed in each case. However, drawing together the information available, the results of the present study are in agreement with the theory that severe deterioration in physical fitness and the ability to perform work does not occur until the weight loss approaches ten per cent (11). Alteration of biochemical parameters beyond the limits of normal must also require either a longer period of restriction or a greater degree of restriction. The failure of the recovery time (Periods 3 and 5) to correct all changes accompanying the low-calorie diets (Periods 2 and 4) merits further study.

SUMMARY

A study was undertaken to determine the effects of a decrease in energy consumption, either alone or associated with an increase in energy expenditure, on physical performance and various biochemical parameters. The study was divided into five experimental periods as follows: Period 1 — 3600 calories per day, normal activity; Period 2 — 1800 calories per day, normal activity; Period 3 — 4000 calories per day, normal activity; Period 4 — 1800 calories per day, normal activity increased by 500 calories per day; Period 5 — 4000 calories per day, normal activity.

Significant changes were observed in mean body weight and in work capacity measured as PWC 170. Mean body weight decreased during both periods of low energy consumption; the loss during Period 4 (with the increased energy expenditure) was greater than that observed in Period 2. PWC 170 decreased following Period 2 and continued to decline for the duration of the study. A carryover effect from the first stress situation into the subsequent periods was indicated.

The other physiological and biochemical parameters measured remained within the accepted normal ranges with very little change.

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Abstracts of Current Literature

Prepared by the University of Ottawa

A guide to good eating the vegetarian way

E. B. Smith

Journal of Nutrition Education. Vol. 7, July — Sept. 1975

Interesting article dealing with the adaptation of Canada's Food Guide for lacto-ovo vegetarians. This guide shows in stepwise form how to select food and plan acceptable family meals with nutritional quality as first priority.

Foods of similar composition or classified in four group standard servings described and numbers of servings for each family members are tabulated. This instructional material will assist beginning vegetarians in selecting nutritionally adequate, varied and appetizing meals. Address for obtaining this guide is also given.

Texture of broccoli and carrots cooked by microwave energy

E. Shrumph, and H. Charley

Journal of Food Science, Vol. 40, Sept. — Oct. 1975

Both vegetables were analyzed for changes in content of pectic substances and cellular structure and also evaluated by a taste panel. This particular

study shows that broccoli and carrots when cooked conventionally resembled the shape of the raw stalk or root and when cooked by microwave energy have a shrunken and collapsed appearance. Conventionally cooked carrots seem to be less fibrous than microwave cooked carrots; the outer area of broccoli-cooked by microwave was tougher than that cooked conventionally but the interior was judged softer. Weight loss with microwave cooking was more than double that of broccoli and carrots cooked conventionally. There was essentially no difference in total insoluble pectic substances because of method of cooking.

Complexity of Homemaking Tasks

Rose E. Steid

1975

Home Economics Research Journal, 3(4): 223-240

Two hundred and eight homemakers from Ithaca, New York, participated in a study to determine the cognitive demands of homemaking tasks. The young wives were asked to name tasks low and high in certain cognitive requirements and to provide explanatory information, ratings, and rankings.

Their explanations of the cognitive factors (attention, judgment, planning) concerned most often the content of the work and less often the environmental content and more general cognitive and affective factors. For the high cognitive tasks, the homemakers often noted quality and quantity considerations, timing and procedural activities. For the low cognitive tasks, the homemakers indicated less demanding aspects of timing, effort, and procedural matters.

Through their ratings and rankings of the homemaking tasks, the wives indicated that high cognitive tasks were complicated and low cognitive tasks uncomplicated. Their responses to direct questions asking what made homemaking tasks complicated or uncomplicated supported the working definition that the cognitive factors were dimensions of complexity.

Directions for educational programs are implicit in the finding of this research. Results can be used in planning programs to help young consumers choose and control their personal effort levels in managing homemaking tasks and to assist manufacturers, product designers, architects, and builders in providing more humane options for consumers.

The nuclear and the extended family: An area of conceptual confusion

B. Yorburg

1975

Journal of Comparative Family Studies, 6(1): 5-12

The purpose of this study is to establish a typology of families that would encompass all family units in major types of societies — nonliterate hunting and gathering and horticultural societies, agricultural societies, industrializing societies and highly industrialised societies. The problem of defining family types is believed to be due largely to a failure to define the concepts nuclear and extended according to essential criteria. Essential features are

degree of economic interdependence between members of the wider kin network, degree to which psychological interdependence is confined to related kin units, degree of intergenerational authority between relative nuclear families or segments of these families, and degree of contact between these units. Common household residence is not regarded as essential to the definition of nuclear or extended family units.

Four model types of families are then defined on the basis of the above principles. The four types are: extended, modified extended, modified nuclear, and nuclear. The definition of these concepts differs in certain ways from current usage. This particular model appears to offer a solution to some of the difficulties encountered in classifying family types, in determining their relative frequency in major kinds of societies and in clarifying the relationship between technological development and family forms.

Crystalline fructose: Use as a food ingredient expected to increase

T. E. Doty, and E. Vanninen

1975

Food Technol. 29(11): 34-38

Fructose, also called levulose or fruit sugar is one of the most common natural sugars. However, until the last few years, the use of pure fructose has been limited mostly to pharmaceutical and laboratory applications. Due to new processes, fructose may be produced to-day both economically and on a large scale.

Pure fructose possesses unique physical, chemical, and metabolic properties which make its promotion as a sweetening agent most desirable.

Pure fructose is about 50% sweeter than sucrose; it has a synergistic sweetening effect with saccharin. It can therefore be used at lower levels in foods to give the same sweetness and offer many possibilities for reducing the calorie content of sweetened foods. Because of its high solubility, fructose is especially suitable for use in dietetic foods where crystallization is undesirable: candies, ice creams, beverages. In addition, it is very hygroscopic, a property which makes it an excellent humectant for use in baked goods and confectionary.

Fructose is one of the most chemically reactive sugars. It takes part in browning reactions and thus, it contributes to the color and flavor enhancement of various foods without necessity of overheating them.

The chelating ability of fructose, especially with iron, has been recently noticed and found advantageous in treating iron deficiency.

Absorption of pure fructose is probably accomplished from the intestine by an active transport mechanism, significantly slower than that of glucose or both glucose and fructose moieties after the consumption of sucrose. Moreover, fructose does not stimulate insulin secretion, nor is insulin required for its transport into cells of peripheral tissues or for its phosphorylation in the liver, where it is preferentially converted to glycogen. Fructose is therefore better tolerated by diabetics than either glucose or sucrose. In summary, the diversity of desirable properties found in pure fructose make it a promising ingredient in the traditional dietetic foods of the future.

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If you are not concerned about fat or calories, you can add butter, margarine or cooking oil for flavour, but the food still won't stick if you sprayed the pan with PAM before cooking.

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If you missed your free can of PAM, there is a coupon offer in previous issues of the Canadian Home Economics Journal. For more information of professional interest, please write: Home Economists, Boyle-Midway Canada Ltd., 2 Wickman Road, Toronto, Ontario M8Z 5M5.

Reviews

Described — not reviewed

"My Favorite Recipe" — A booklet containing recipes using canned salmon and consumer tips by twelve of Canada's leading food editors. Up to 100 free copies may be had from

The Canned Salmon Association of B.C.
P.O. Box 33798
Postal Station D
Vancouver B.C. V6J 4L6

Available in French and English

Human Reproduction

Eric Golanty
Holt, Rinehart and Winston, Inc. 1975
225 pages

This paperback is an excellent reference book for teachers, counsellors, nurses and medical students.

The content of the book is well-organized and complete. The general literary content is written in a readable form. Some of the information is very technical. The artistic drawings are specific to detail, yet simple and descriptive. These illustrations would be an excellent reference.

The information in the book is up-to-date and the latest sexuality statistics are given. The chapter "Sexual Mateships" gives an excellent description of sex drives and basic sexuality.

This book would be an excellent reference for teachers of family life education.

Reviewed by Jerrine Witzel, Heydon Park Secondary School — Toronto

Katchadourian, Herant A.
Lunde, Donald T.

Fundamentals of Human Sexuality, second edition
Holt, Rinehart and Winston, 1975
595 pages

Fundamentals of Human Sexuality covers a wide range of topics and as such provides an excellent resource for teachers of senior grades. The content is presented in a factual, non-moralistic way; explicit diagrams and pictures are included in appropriate places.

The book is divided into three sections:

- Part I *Biology*
- Part II *Behaviour*
- Part III *Culture*

An historical overview of sexuality is highlighted in Part I as well as a detailed explanation of such topics as anatomy of the sex organs, physiology of sexual functions, menstruation, pregnancy, childbirth and contraception.

Part II places an emphasis on sexual behaviour, psychosexual development, sexual intercourse, deviations in sexual behaviour and sexual disorders. The detailed approach to topics such as masturbation and homosexuality provides useful information for the teacher.

Cultural and historical aspects of human sexuality are dealt with throughout the book and, in particular, in Part III through the chapters *The Erotic in Art, Literature and Film* and *Sex and Morality*. Although the chapter *Sex and the Law* pertains to the laws of the United States, three areas for discussion are developed:

- sexual behaviour of consulting adults in private;
- offences involving force and violence, offences against children, offences that present a public nuisance;
- commercial exploitation of sex.

The final chapter discusses sexuality and current trends.

The hope of the authors is that future attitudes to sexuality will be based on knowledge rather than ignorance. *Fundamentals of Human Sexuality* provides a resource for helping to achieve this goal and also places an emphasis on a multidisciplinary approach.

Reviewed by Gloria Torrance, Consultant, Health Education, Toronto Board of Education.

Katchadourian, Herant A.

Lunde, Donald T.

Biological Aspects of Human Sexuality,

Holt, Rinehart, Winston, 1975

174 pages

This is Part I of the larger volume: *Fundamentals of Human Sexuality* and has been produced as a separate volume to accommodate a need for a subject matter dealing with one area of sexuality, Biology.

Anatomy, physiology, conception, contraception are dealt with in detail. Appropriate diagrams are included.

This would be a useful book for teachers of senior division and college students.

Reviewed by Gloria Torrance, Consultant, Health Education, Toronto Board of Education.

Iron

Are You Getting Enough in Your Diet?

An informative five-page folder that provides the reader with a quick review of basic nutrition facts about iron. The folder discusses the function of iron, recommended intakes, bio availability, iron deficiency anemia, key food sources, meal planning guidelines and a few recipes are featured. References are not included. For your free copy write: Food Issue — Iron, General Foods Kitchens, P.O. Box 4019, Terminal A, Toronto.

**Faculty of Education
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EDHO 5751 *Management of Family Resources*

A study of management principles examined through an ecological and systems approach. Management of individual and family resources in relation to values, standards, goal satisfactions, and the quality of living.

Guest instructor

- Mrs. Nancy Cook, MSA (Toronto)
In Agricultural Economics
- formerly Assistant Professor,
Dep't of Economics, U.N.B.

July 5 — 23, 1976

**Faculty of Education
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EDHO 5722 — *Consumer Roles of the Family*

Current trends in consumer practices related to the standards attained in various areas of home economics. Government legislation and its effect on health and safety. Trends resulting from the increasing number of choices available to the consuming public.

Guest instructor

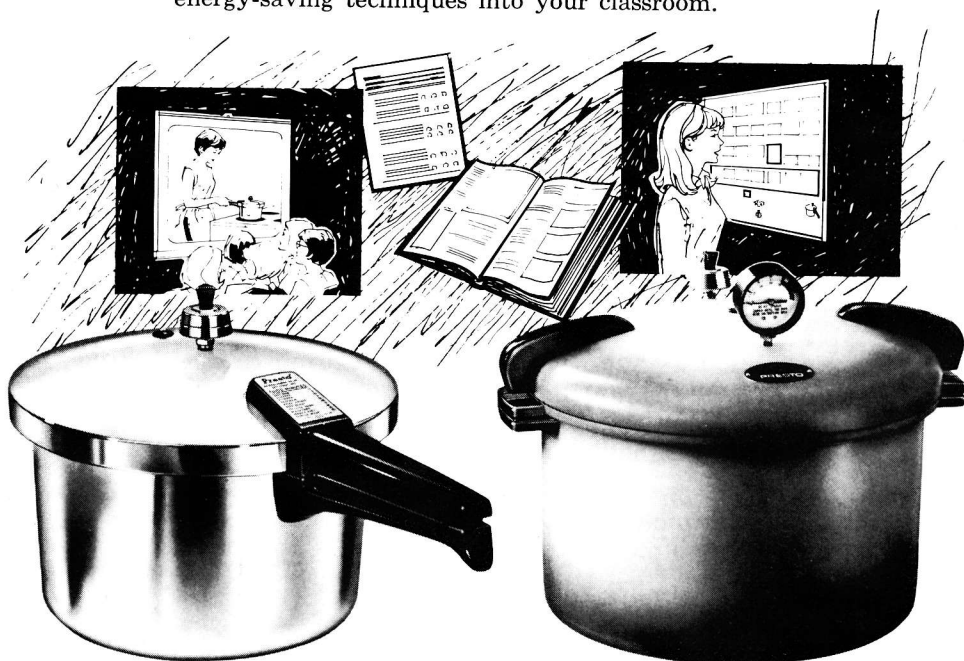
- Mrs. Nancy Cook, MSA (Toronto)
in Agricultural Economics
- formerly Assistant Professor,
Dep't of Economics, U.N.B.

July 26 — August 13, 1976

For further information contact Eleanor E. Wein, Assistant Professor, University of New Brunswick, Fredericton, N.B.

Presto announces two new programs to help you teach pressure cooking and canning.

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by Kay Spicer

New Minimum Standards for the Flammability of Carpets and Rugs

Effective January 1, 1976 all carpets and rugs, imported, advertised or sold for Canadian use must meet these requirements, which will result in increased protection for consumers against accidental ignition of floor coverings.

These regulations are the result of ongoing programs involving textile flammability in the Department of Consumer and Corporate Affairs, which began in 1971 with the establishment of minimum flammability requirements for all textile products. The new, more severe standard for carpets has been developed in recognition of the fire spread potential of carpets used more and more to cover large floor areas in dwellings. Small accent and bath mats, which do not represent the same fire spread potential, are not required to meet the new standard. These small rugs and mats must meet the flammability standards set in 1971 and must carry a warning label to advise consumers of their more flammable nature.

Kellogg Enters the Shredded Wheat Market

Lightly toasted, spoon-sized Mini-Wheats, frosted with regular or brown sugar are available across Canada.

"Statistics show us that the shredded wheat segment of the cereal market has shown significant growth" explained Ralph Davis, vice-president and director of advertising for Kellogg Salada. "We felt our first entry into this market should be significantly different yet meet consumer demands for nutrition and flavor. Mini-Wheats has proved to be just that. The shape, size, texture and flavor all provide the elements which make Mini-Wheats different from other ready-to-eat cereals," he continued. Davis emphasized consumers receive all the nutritional elements of the whole wheat grain and in addition benefit from the addition of niacinamide, riboflavin, thiamine, and iron . . . something they don't get from regular shredded wheat.

"Kellogg considers this part of the ready-to-eat cereal market so important, we have committed \$1M to special production equipment just for Mini-Wheats," Davis said. For further information contact Kellogg Salada Canada Ltd., Humber Tower Building, 6700 Finch Avenue W, Rexdale, Ontario M9W 2P2.

Olympic Cups?

Lily Cups Ltd., of Toronto has been named official and exclusive supplier of disposable dinnerware for the 1976 Olympic Games. Lily products will be used by more than 10,000 athletes, trainers, and officials who will be housed at the Olympic Village now under construction near the site of the Games. It will be the first time in the history of the Games that athletes will be served totally on disposable dinnerware. The contract with COJO (Comité Organisateur des Jeux Olympiques) permits Lily Cups Ltd. and, its affiliated companies to use the Montreal Games' symbol in worldwide advertising and marketing of its products.

Consumer Information

Nestlé (Canada) Ltd. has prepared a series of releases explaining some of the topical questions related to the coffee business. For Nestlé Consumer Information Releases contact Nestlé (Canada) Ltd, 1185 Eglinton Ave. E., Don Mills, Ontario M3C 3C7.

Off With the Black Flies

Summer's coming and so in another batch of black flies and mosquitoes. This year look for Deep Woods Formula Off; a unique formula which effectively repels black flies and mosquitoes even under the most severe conditions. Also, new for 1976, are two new Raid Continuous Action Insecticide products, an Insect Strip to be hung out of reach and an Insect Block, reclosable and unobtrusive in appearance making it ideal for use in living rooms, bedrooms, etc. Contact: Mr. C. H. Naughton, Product Manager, S. C. Johnson and Son Ltd., Brantford, Ontario.

Shout

Have you heard about the new heavy duty, laundry and stain remover, named Shout, from the above mentioned S. C. Johnson, Brantford. It is something to shout about because it really works well on badly soiled man-made fibres.

Another Yarn from Dupont

A worsted spun yarn, called Civona, made from acrylic fibres has been developed by Dupont. Civona closely matches marino wool in appearance and characteristics. The wool-like yarn was first used in various sweater lines produced for the 1975 holiday season.

POSITION AVAILABLE

Autumn, 1976. Assistant Professor historic costume and textiles, socio-psychological, ethnic aspects of textiles and clothing. Upper division and graduate courses. Research oriented; interest in curriculum development. Ph.D. completed or near completion college teaching experience, demonstrated research ability. Salary commensurate with qualifications. Equal opportunity employer. Send vitae to: Dr. Mary Louise Johnson, Director, School of Home Economics, DL-10, University of Washington, Seattle, WA 98195.



Saskatchewan's New Dean

Dr. Doug Gibson, of Saskatoon, a specialist in food science and nutrition, has been appointed dean of the College of Home Economics at the University of Saskatchewan, effective July 1.

He will become the fourth dean in the history of the College and the first male to be appointed to the deanship. He succeeds Dr. Helen Abell, who resigned in May of 1974.

Dr. Gibson is presently head of the Department of Dairy and Food Science in the University's College of Agriculture, a position he will relinquish when he moves to Home Economics. He has headed the Department since 1948, two years after he joined the University and obtained a patent on a process for drying a combination of spent brewers yeast and cheese whey to recover the solids for use in feeds and foods.

Before his University appointment, he spent three years with the Borden Company of Canada as director of research and production. This related to fluid and frozen products as well as to the manufacture and control of fountain fruits and syrups, dry skim and whole milk powder, and dehydrated eggs for overseas shipment. He then joined the Canadian Army in which, as a nutrition adviser, he developed a high protein milk supplement that was used in hospitals to increase the protein intake of injured, post-operative and convalescent personnel. He was awarded membership in the Order of the British Empire (MBE, Military) in 1946.

For many years, Dr. Gibson has been interested in improving nutrition in developing countries. He spent most of 1961-62 in India under the auspices of the United Nations as a government adviser on dairy science and returned in 1963 to assess dairy training in Indian Institutions.

In 1970, he went to Uganda, East Africa, for a three-year appointment as head of the Department of Animal Science and Production at Makerere University. This was part of an arrangement supported by the Canadian International Development Agency under which the Universities of Saskatchewan and Makerere were "twinning" to promote the expansion of research and postgraduate training in the African nation. More recently under CIDA sponsorship, he conducted a survey of agricultural capability in Malawi and of milk production and processing in Lesotho and he headed a mission to Swaziland to study the possibility of improving nutrition by increasing milk production and consumption.

For the past five years, Dr. Gibson has been the technical secretary of the International Dairy Education Centre in Copenhagen, Denmark. Among other positions, he was also for some years nutrition adviser to the Canadian Pulp and Paper Association and produced the first comprehensive report on feeding in logging camps.

Dr. Gibson was born in Winnipeg and attended the University of Manitoba, from which he received the degree of bachelor of science in agriculture and the University of Minnesota, from which he received the master of science and PhD degrees, specializing in dairy science.

National Nutrition Seminar to be Sponsored by General Foods, Limited

As part of its continuing program to promote greater knowledge and understanding of nutrition, Mr. Robert S. Hurlbut, President, General Foods, Limited, announced that the company is sponsoring a national nutrition seminar to be held in Toronto on *May 17, 18 and 19, 1976*, at the Hyatt Regency, Toronto.

The theme of the seminar — “The Canadian Family: The Four Ages” — takes a multi-disciplinary approach to nutrition requirements and how these vary with age. Discussions will centre around the prenatal and infancy periods, childhood and adolescence, the adult years, and the later years. Speakers and workshop sessions will focus on the latest findings in nutrition research and on the practical application of nutrition knowledge.

Mr. Hurlbut said that eminent Canadian speakers from many disciplines will address the seminar which will be attended by representatives of public health, social work, dietetics, nursing, education, sports and recreation, home economics and nutrition-communications.

Dr. Madeleine Blanchet, Director of Planning, Epidemiological Studies, of the Quebec Department of Social Affairs, will present the opening address. Other major speakers addressing the seminar include infancy specialist Dr. Richard Goldbloom of Dalhousie University, Dr. Marion Powell of the University of Toronto and nutrition-economist Dr. Zach Sabry of Nutrition Communications. For further information contact: Mrs. Una Abrahamson, Co-ordinator, GF National Nutrition Seminar, Suite #400, 2 Bloor St. West, Toronto, Ontario M4W 3K1, Telephone: 416-922-5995.

CIRCLE THESE DATES

- | | |
|---------------------|--|
| April 9 — 17, 1976 | National Home Show
Toronto |
| March 29 — 30, 1976 | Kellogg-Salada Nutrition Seminar
Royal York Hotel, Toronto |
| May 17 — 20, 1976 | General Foods Nutrition Workshop
Hyatt Regency, Toronto |
| June 14 — 17, 1976 | Canadian Dietetic Association Convention
Edmonton, Alberta |
| July 14 — 16, 1976 | Canadian Home Economics Association Conference
Four Seasons-Sheraton Hotel, Toronto |
| July 17 — 24, 1976 | International Federation of Home Economics
Congress
Skyline Hotel, Ottawa |

October 21-23 1976. Golden Jubilee Convention of the Nova Scotia Home Economics Association — Hotel Nova Scotian, Halifax, Nova Scotia. A special invitation to the membership of the New Brunswick, Prince Edward Island and Newfoundland associations.

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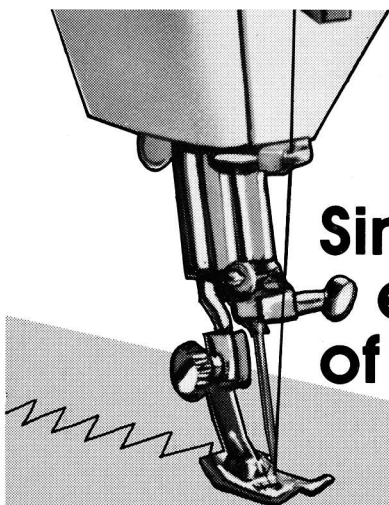
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